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Fig. 1.

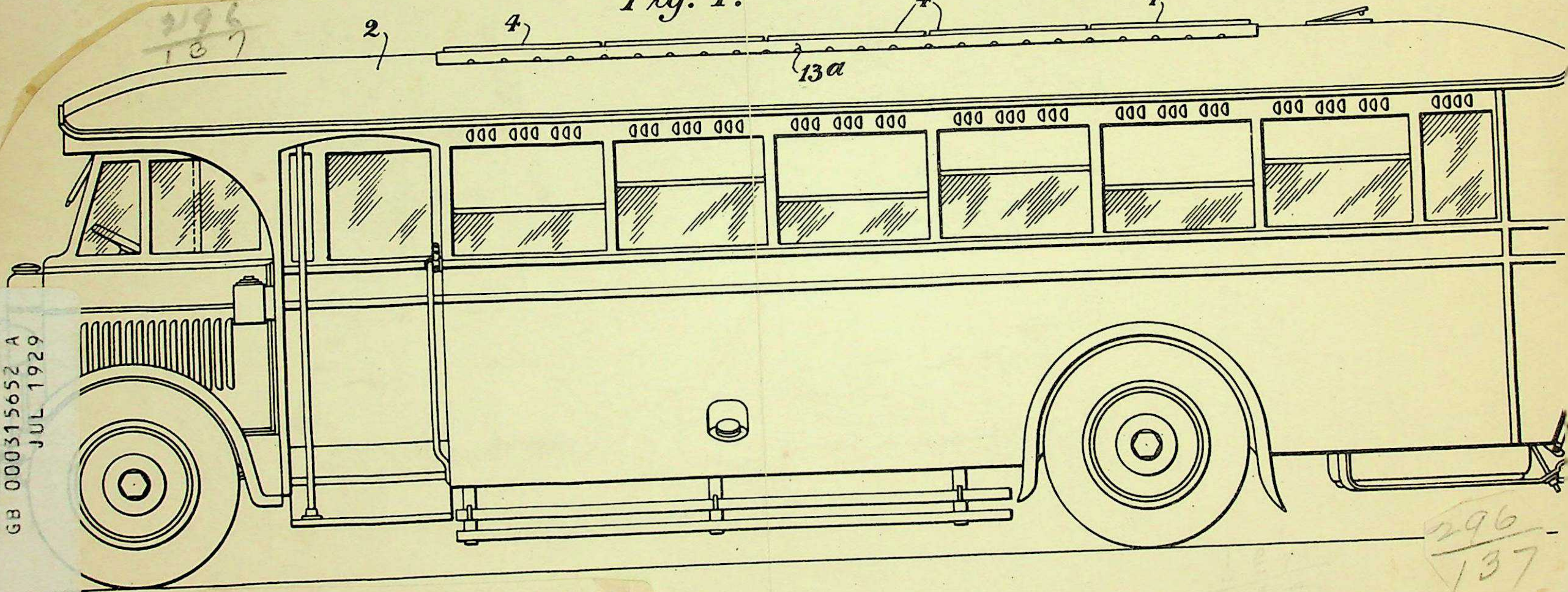

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Fig. 2. #315652

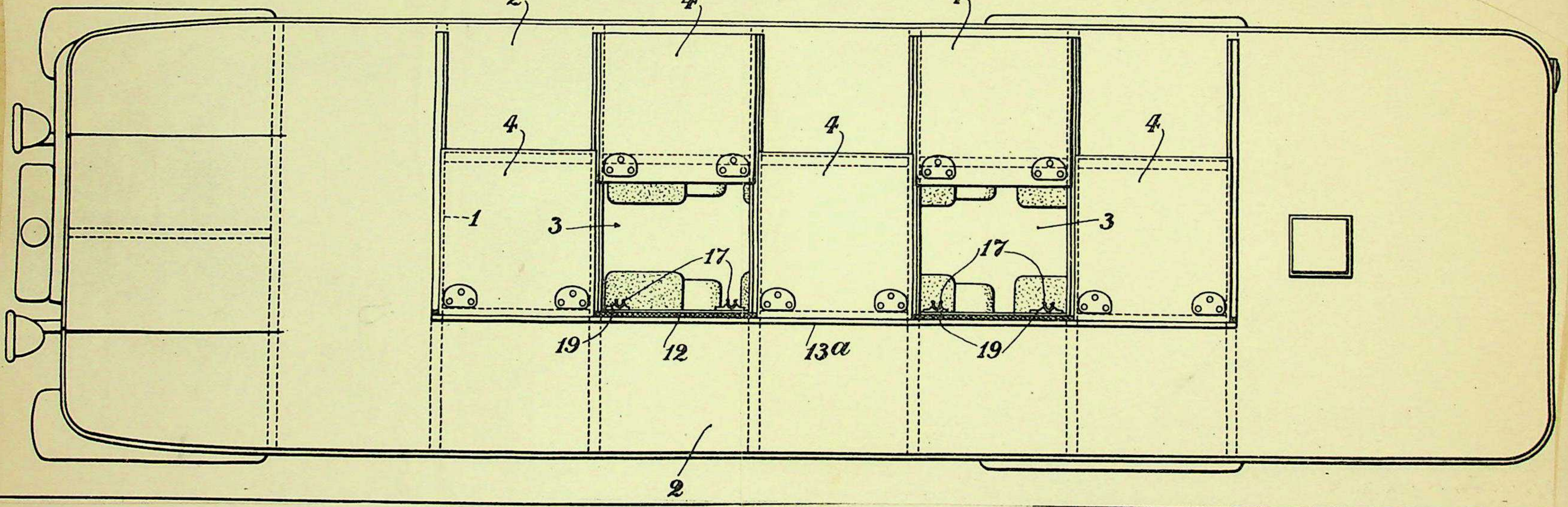
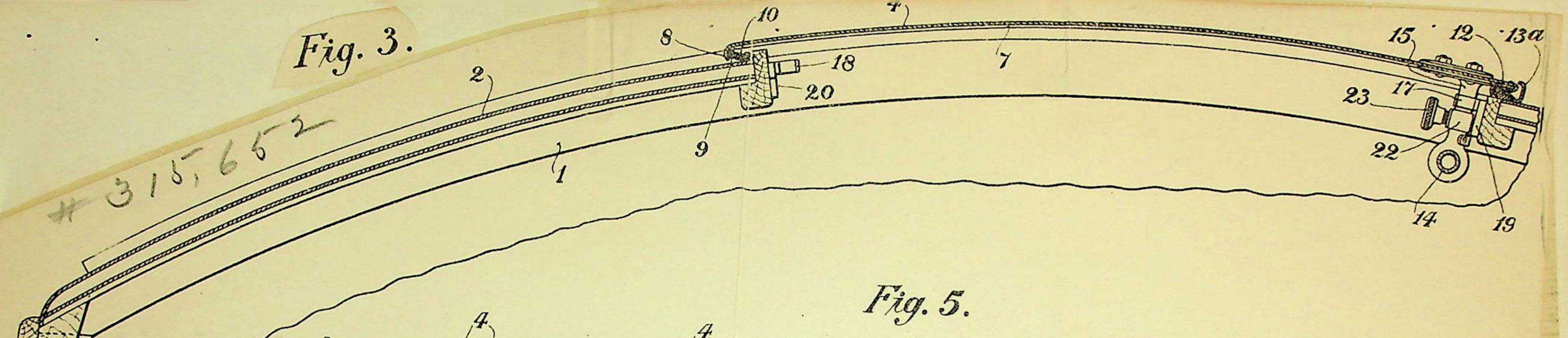


Fig. 3.



#315,652

Fig. 5.

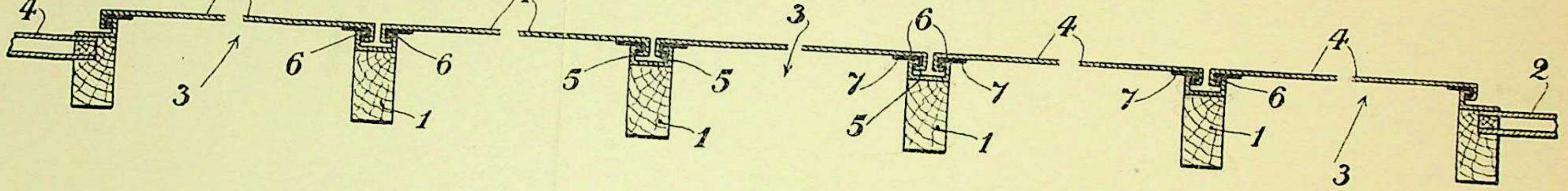


Fig. 4.

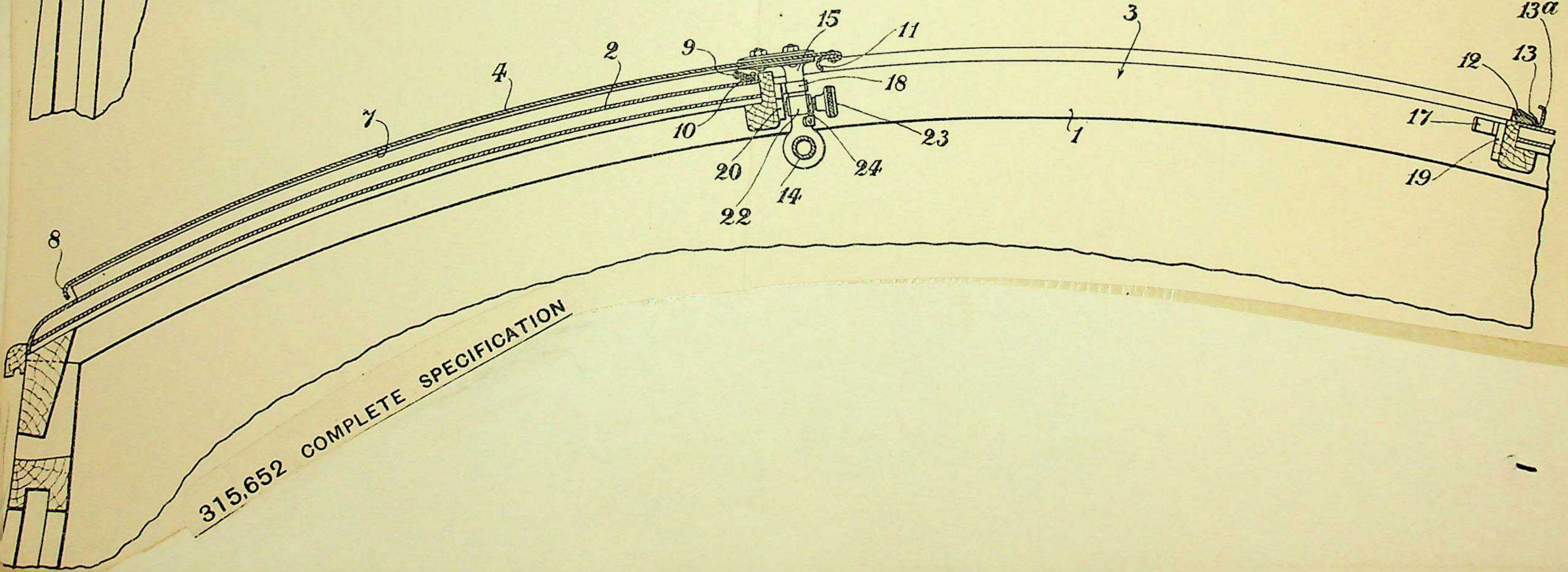


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Fig. 6.

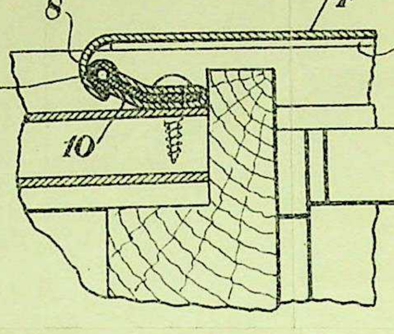

Fig. 7.

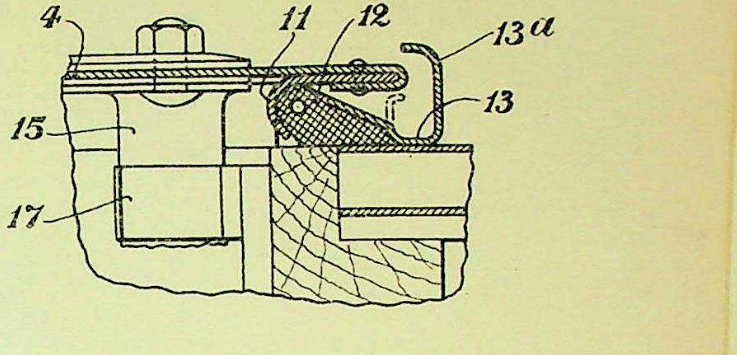

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Fig. 10.

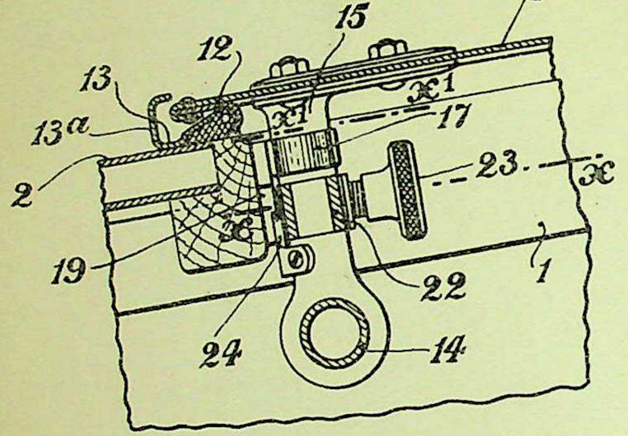


Fig. 11.

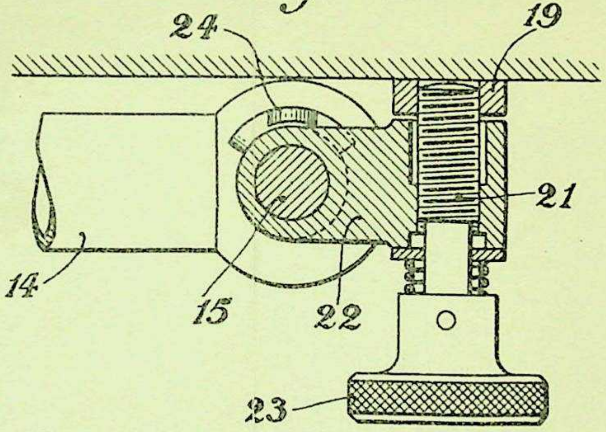
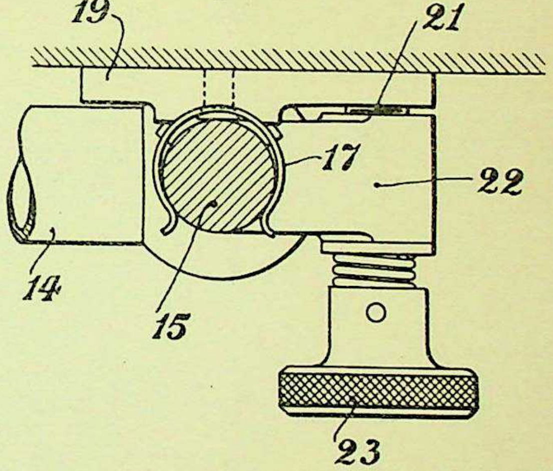


Fig. 12.



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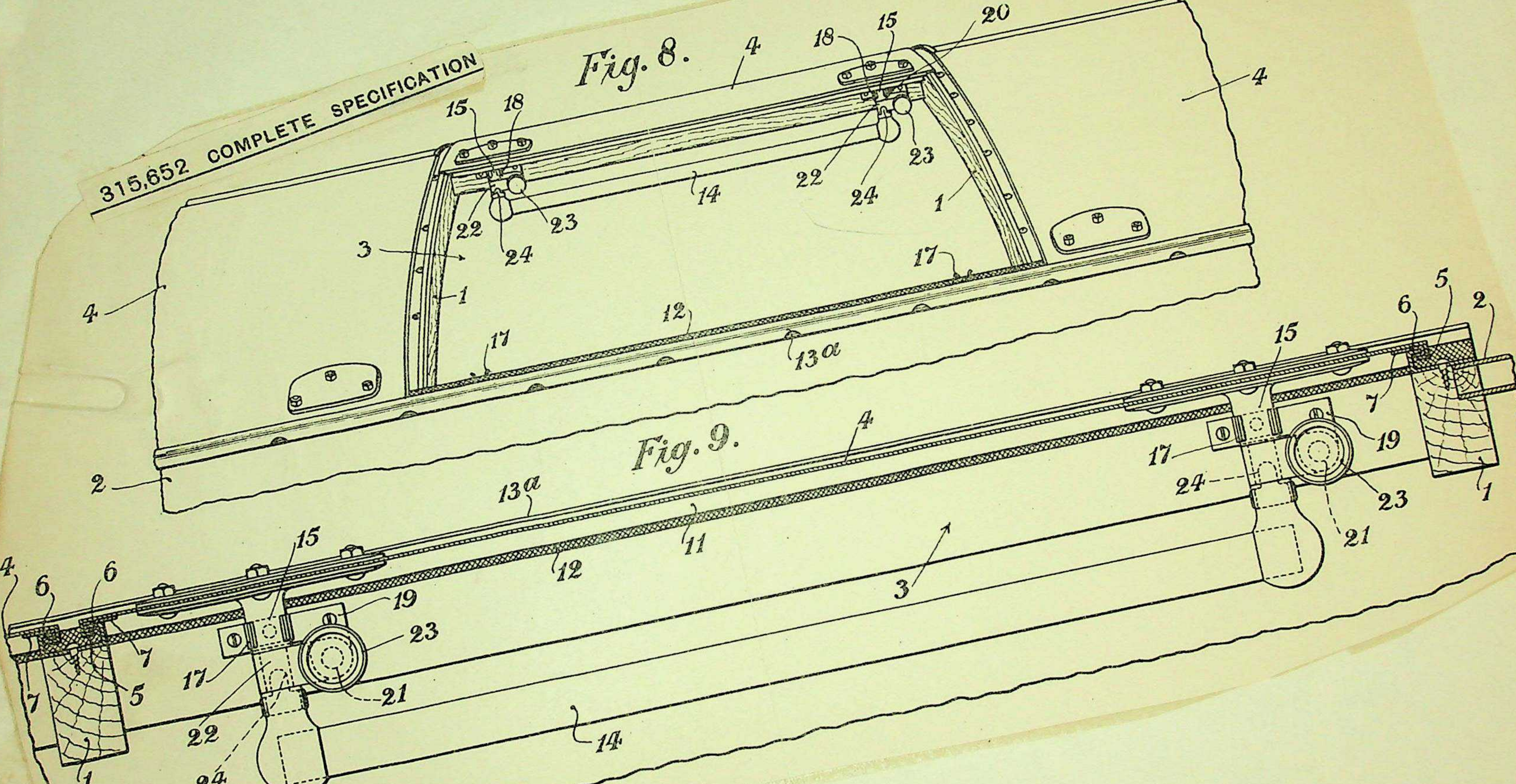

Fig. 8.

Fig. 9.

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PATENT SPECIFICATION

Application Date: Nov. 27, 1928. No. 34,890/28.

" " Jan. 26, 1929. No. 2699/29.

One Complete Left: June 1, 1929.

Complete Accepted: July 18, 1929.

315,652

PROVISIONAL SPECIFICATION.

No. 34,890, A.D. 1928.

Improvements relating to Opening Roofs or Tops of Vehicles.

We, Davidson (Trafford Park) Limited, a Company registered under the Laws of Great Britain, and Albert John William Laslett, British Subject, both of Trafford Park, Manchester, do hereby declare the nature of this invention to be as follows:—

This invention relates to motor and other vehicles wherein the roof or top comprises one or more sliding panels or sections adapted to be slid over a fixed portion of the roof in order to provide an opening, when desired, through which air and light may be admitted to the interior of the vehicle.

The object of the present invention is to provide improved means for providing an opening in the roof or top which enables the vehicle to be quickly and easily converted into one of a semi-open type when required, and which ensures efficient protection against ingress of rain or draughts when the roof is closed.

According to the invention, the roof comprises fixed or permanent side portions and a middle slidable portion comprising one or more panels adapted to be slid laterally so as to lie over one of the said fixed side portions in order to produce the desired opening in the roof. Suitable guides are provided in connection with the sliding panel or panels in order to prevent displacement in the longitudinal direction of the vehicle and to prevent the said panel or panels from rising. Stops are provided for limiting the lateral sliding movement in both lateral directions, and catches or the like are fitted for retaining the panel or panels in their closed position. In order to ensure a weatherproof joint when the roof is closed the panel or panels carry at opposite sides angle-section or rebated strips which engage or interlock with corresponding strips upon the fixed roof portions, a rubber tube fixed to one of the strips being interposed between parts of the said strips.

In carrying out the preferred form of the invention in connection with a motor omnibus or like vehicle, the roof comprises the usual spaced transverse roof sticks or ribs bent to the desired camber and fitted into the body cant rails or sides. The lateral portions of the roof are permanently covered by tongued and grooved boards or other effective material fastened to the roof sticks, leaving a central longitudinal opening crossed by the said roof sticks and of a width equal to about one-third of the total width of the roof. This opening is adapted to be closed by a laterally-sliding portion which may be divided into four or other convenient number of individually sliding panels or hatches. These panels or hatches are curved to the roof camber and may be covered with duck cloth bedded in white lead. Fitted to the forward and rear end of each panel is a metal channel supported upon hardwood runners fixed to the roof sticks, and each of these channels is provided with a depending flange which overhangs the side of the respective runner so as to serve to guide and prevent endwise displacement of the panel in its lateral sliding movement and also to act as a weather baffle. To prevent the panels from rising, an upstanding metal angle strip is fixed to the roof sticks at opposite ends of the roof opening and has a horizontal top flange overhanging the adjacent edges of the end panels, while between adjacent panels vertical distance pieces are fitted to the roof sticks and carry upon their top edges flat metal strips overhanging the said distance pieces at each side in tee form, and overlapping the edges of the said adjacent panels, so as to form guides for the latter. These panels or hatches can be slid laterally towards one side of the vehicle so as to lie over the fixed roof portion at that side and leave the central portion of the roof open. The outward sliding movement of the panels may be limited by longitudinal flanges or rain-guards fixed upon the outer edges of the permanent roof portion, and movement in the opposite direction beyond the closed position may be limited by a longitudinal rib or batten fixed upon the underside of each panel near the opening edge of the latter so as to engage the edge of the adjacent permanent roof section. This

[*Price* 1/-]

rib or batten, which also serves as a finger-grip for operating the hatch, may carry a pivoted spring-loaded telescopic catch device adapted to engage a stud on one of the roof-sticks, in order to hold the panel in its closed position. The lateral edges of the panels overhang and are vertically spaced from the respective permanent side roof sections, and in order to ensure a weather-proof joint when the panels are closed, the said overhanging edge which moves over the fixed roof portion is provided upon its underside with an angle-sectioned or rebated rubber hardwood strip having an inwardly-directed bottom flange the upper face of which is slightly inclined upwards from the edge, while secured to the fixed roof portion at the edge of the roof opening is a correspondingly shaped but reversed hardwood strip having an outwardly directed top flange inclined upon its under face so as to be adapted to co-operate and to be engaged by the strip on the panel, the flange of the latter strip closely engaging beneath that on the fixed roof portion. Interposed between the end of the flange of one strip and the opposed face of the other strip is a rubber tube fixed to the one part and adapted to be compressed to form a close joint. At the opposite edge of the panel a similar hardwood strip but having its bottom flange presented outwardly, is fixed to the underside of the overhanging edge portion of the said panel at a short distance from the extreme edge, and co-operates with an angle strip fastened to the fixed roof portion with its top flange presented inwards to be engaged on its inclined under face by the said flange on the panel strip, and a rubber tube being interposed as before. Thus, a close joint is obtained at each side of the panel when the latter is closed, which joint is maintained by the operation of the telescopic spring catch.

The opening in the roof may extend for the whole or for any desired portion of the total length of the roof.

Dated this 26th day of November, 1928.
H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

PROVISIONAL SPECIFICATION.

No. 2699, A.D. 1929.

Improvements in Fastening Devices.

We, DAVIDSON (TRAFFORD PARK) LIMITED, a Company registered under the Laws of Great Britain, and ALBERT JOHN WILLIAM LASLETT, British Subject, both of Trafford Park, Manchester, do hereby declare the nature of this invention to be as follows:—

This invention relates to fastening devices such as for fastening or holding a sliding panel, sash or like part in any desired position, or generally for securing two relatively movable parts together. The invention, however, is particularly applicable for holding in its open or closed position the sliding hatch or panel of an opening vehicle roof, such as that described in our Provisional Specification No. 34,890 of 1928.

The principal object of the present invention is to provide an improved fastening device which will enable two relatively movable parts to be tightly drawn together so as to avoid rattle or play between them. A further object is to admit of the fastening device being readily reversible as regards its position so that when applied, for example, to a sliding panel, the same fastener can be employed for holding the panel either in an open or in a closed position.

According to the invention, the fastening device comprises, upon one of the relatively movable parts such as a sliding panel, a member provided with a transverse passage which is internally screw-threaded for a portion of its length from one end while the remaining portion is of larger diameter, the said member being fitted with a screw having threads for a portion of its length from the outer end and having adjacent a head or shoulder a plain inner end or neck of less diameter than the threaded part, the said screw being in its unfastened position, screwed into the threaded end of the passage but being adapted to be screwed out of engagement with said threaded end and into engagement with a threaded aperture in a plate or like member on the other of the relatively movable parts to be fastened, such as the fixed frame to which the sliding panel is to be secured, so as thereby to cause the screw-carrying member on the one part to be drawn tightly against the plate or like member on the other part. The said screw-carrying member may be swivelly mounted upon the one part, such as upon a sliding panel, so that it can be reversed in position and used so as to fasten the panel or the like in either its open or closed position.

In carrying out the preferred form of the invention in connection with a transversely-sliding hatch or panel of an opening vehicle roof, as described in our Provisional Specification No. 34,890 of 1928, the means for fastening or holding the said hatch in either its open or closed position comprise two depending shanks carried at their upper ends by attachment plates which are fastened to the underside of the hatch adjacent the opening edge and respectively near opposite ends of the said hatch. The attachment plates may conveniently be fastened to the hatch by means of bolts passed through the hatch and through a plate upon the outside of the latter. The lower ends of the depending shanks terminate in enlargements which are recessed on their opposed sides to receive the ends of a longitudinal bar constituting a hand-rail and the means for sliding the hatch. Near the upper end each shank is reduced in diameter to form a neck, and freely rotatable upon this neck is a swivelling horizontal arm or lug, which can thus turn in a horizontal plane. The outer end of this arm is drilled with a horizontal transverse passage which for about one half of its length is screw-threaded from one end, while its other half is plain and of larger diameter than the threaded portion.

Mounted within the passage is a screw which is threaded from its outer end for a distance rather more than the length of the plain portion of the passage, while at the inner end of the screw, between the threaded end and a head or shoulder, is a plain neck portion which is of smaller diameter than the threaded portion and is of a length equal to that of the threaded portion of the passage.

When the sliding hatch is closed each of the depending shanks carrying the hand-rail is adapted to be engaged by a spring clip on a longitudinal member of the permanent portion of the roof, and the swivelling arm on each shank may be turned so as to lie parallel and close to a plate attached to the side face of said longitudinal member. This plate is provided with an internally threaded hole opposite to and adapted to receive the screw.

Initially, in its unfastened position, the threaded portion of the screw is engaged with the threaded portion of the passage in the arm. To fasten the hatch the screw is advanced until the threaded portion leaves the threaded portion of the passage which is now engaged by the neck portion of the screw, while the said threaded portion of the screw lies within the plain enlarged end of the passage with its extremity just entering the threaded hole in the fixed plate on the permanent roof member. If, now, the screw is further rotated it will advance into the fixed plate and the head or shoulder will cause the swivelling arm to be pressed tightly against the plate, thus holding the hatch firmly in position without liability of rattle occurring.

To fasten the hatch in its open position, the swivelling arms are swung round through 180°, when the screws can be engaged in a similar manner with threaded holes in plates secured to the longitudinal roof member adjacent the opposite side of the roof opening, the depending shanks being first held by spring clips on said member.

Dated this 25th day of January, 1929.
H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

COMPLETE SPECIFICATION.

Improvements relating to Opening Roofs or Tops of Vehicles.

We, DAVIDSON (TRAFFORD PARK) LIMITED, a Company registered under the Laws of Great Britain, and ALBERT JOHN WILLIAM LASLETT, British Subject, both of Trafford Park Road, Trafford Park, Manchester, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to motor and other vehicles wherein the roof or top is provided with an aperture covered by a sliding panel or section which is adapted to be opened when desired in order to admit air and light to the interior of the vehicle.

The object of the present invention is to provide an improved arrangement which enables the vehicle to be quickly and easily converted into one of a semi-open type when required, and which ensures efficient protection against ingress of rain or draughts when the roof is closed.

Hitherto, in the vehicles of the type referred to, the panel has been arranged to slide in the longitudinal direction of the vehicle to open or close the aperture in the roof, but according to the present invention one or more panels or sections which are slidable in the transverse direction of the vehicle are provided, the arrangement being particularly suitable for use on motor omnibuses and like vehicles. According to the preferred construction the roof of the vehicle comprises fixed or permanent side portions and a middle portion comprising one or more movable panels adapted to be slid laterally so as to lie over one of the said fixed side portions in order to give the desired opening in the roof. Suitable guides are provided in connection with the sliding panel or panels in order to prevent displacement in the longitudinal direction of the vehicle and to prevent the said panel or panels from rising. Stops may be provided for limiting the lateral sliding movement, whilst suitable catches may be provided for retaining the panels in their open and closed positions. For this purpose the panel may carry at one end a pair of depending members or short rods adapted to engage spring catches at opposite edges of the opening according to whether the panel is in its open or closed position. Positive retaining means may be provided in the form of swivelly-mounted screws adapted to engage tapped holes in plates adjacent opposite edges of the opening, the screws being capable of being turned to face either edge, for the purpose of securing the panel in either its open or closed position. The sliding edges of the panels may be rendered weather-proof by being formed with inturned flanges engaging beneath outturned flanges on the body of the vehicle; or other means may be provided to give weather-tight joints.

Figure 1 of the accompanying drawings represents a side view of a motor omnibus in which the roof is fitted with laterally sliding panels in accordance with this invention.

Figure 2 is a plan of the roof, showing two of the panels opened.

Figure 3 is a cross-section through a portion of the vehicle roof and through one of the panels upon a larger scale, showing the said panel in its closed position.

Figure 4 is a similar sectional view but with the panel moved into its fully open position.

Figure 5 represents a longitudinal section through a portion of the vehicle top, showing the flanged edges of the panels.

Figures 6 and 7 are sectional views of the stops or buffers for engaging the opposite edges of the panel when the latter is closed.

Figure 8 is a perspective view of part of the roof of the vehicle showing one of the apertures, the covering panel being in its open position.

Figure 9 is a section through one of the panels when closed, taken in the longitudinal direction of the vehicle to illustrate the spring catches and the clamping screws for locking the panel.

Figure 10 is a sectional view through the end of the panel taken in a plane at right-angles to that shown in the preceding figure.

Figure 11 represents a cross-section on the line $x—x$, Figure 10, upon a larger scale.

Figure 12 illustrates a cross-sectional view on the line $x^1—x^1$, Figure 10.

Referring to the drawings, the roof of the omnibus is supported by the usual spaced transverse roof sticks or ribs 1, bent to the desired camber and fitted into the body cant-rails or sides. The side portions 2 of the roof are permanently covered by boards or by other suitable material fastened to the supporting ribs 1, but down the middle of the roof is left a series of rectangular apertures 3, separated by the ribs 1 and disposed side by side in line, each aperture extending across the roof for substantially one third of the entire width of the latter. Each aperture 3 is adapted to be covered by a separate movable panel 4 shaped to correspond to the camber of the roof and arranged so that it may be slid in the lateral or transverse direction of the vehicle so as to close the aperture as stated, or so as to uncover the latter for admitting light and air into the vehicle. For this purpose the front and rear side edges of each panel are formed with inturned flanges 5 arranged, as clearly illustrated in Figure 5, to engage beneath outwardly-extending flanges 6 fixed to the respective ribs 1 which constitute the sides of the opening, the co-operating flanges 5 and 6 forming guides which enable the panel to be freely moved in the lateral direction of the vehicle roof, the said flanges at the same time effectively preventing rain from entering beneath the side edges of the panel and forming weather-proof joints. The panels 4 may be of aluminium, if desired, in which case wearing strips 7 of a harder metal may be fitted beneath the edges of the panel, as shown. In order to form stops to prevent each panel from moving in the lateral or transverse direction of the vehicle beyond its closed position, and in order, at the same time, to prevent rain or draught from entering the vehicle beneath the ends of the panel when the latter is closed, each end of the panel opening is fitted with rubber or other buffer strips which are engaged by depending parts or flanges at the end edges of each panel. Thus, referring particularly to Figures 6 and 7, the edge of the one end of the panel 4 is formed with an integral curled-down part 8 which is inwardly-directed and arranged to engage against a tubular rubber strip 9 upwardly inclined and secured to the fixed part of the vehicle roof, alongside the end edge of the opening, preferably by screws engaging holes in a metal attachment plate 10 which may be folded over an extension of the tubular strip 9. At the opposite edge of the panel is a depending flange 11 outwardly curled, as shown, to engage an upwardly projecting rubber buffer strip 12 disposed alongside the opposite edge of the opening, whilst fitted against the said buffer strip is a metal channel member 13 having an upstanding side or rain-guard 13ª, the upper edge of which may be curled inwards. Thus, when the panel 4 is closed the flanges or depending parts 8 and 11 engage the respective buffer strips 9 and 12 which prevent further movement, whilst any rain or draught is effectively prevented from entering the vehicle between the buffers and the panel, rain being prevented from getting beneath the sides of the panel owing to the shape of the cooperating guide flanges 5 and 6. Holes may be formed in the channel member 13 to allow any water which may enter the latter to drain away. The inner edge of the said channel may extend up as shown by dotted lines in Figure 7, if desired, to form a double baffle, a separate strip or other means being provided for securing the buffer 12.

In order easily to operate the panel 4 from the interior of the vehicle the said panel is provided at its one end with a horizontal bar 14 carried by a pair of short depending rods 15 secured to the panel by bolts or other means engaging holes in suitable attachment plates 16 at the upper ends of the rods. The bar 14 thus enables the panel to be readily opened or closed and may also serve as a hand rail for passengers. Means are provided for retaining each of the panels in its open and closed positions and for this purpose clips 17 and 18 are provided at opposite ends of the panel aperture, two clips being fitted at each end. When the panel is closed the clips 17 at the one end engage the rods 15 which carry the hand rail, whilst when, on the other hand, the panel is fully opened the clips 18 at the opposite end engage the rods 15, so as to hold the panel in place and at the same time prevent further outward movement.

The clips 17 and 18 are respectively carried by attachment plates 19 and 20 fixed to the opposite ends of the opening in the roof, and in order positively to lock the panel in either its open or closed position each attachment plate is formed with a screw-threaded hole which is adapted to be engaged by a screw 21 on each of the depending rods 15. Each screw, which is fitted with a head end 23, engages a horizontal internally-threaded hole in a block 22 which is swivelly mounted on the respective rod 15, the latter having a necked portion which engages a plain vertical hole in the opposite end of the block, the arrangement being such that the latter may be turned about the rod until the screw faces the opposite direction. A stop 24 is provided on the rod to limit the rotation of the block 22 and when the latter is turned to engage the one side of the stop it is arranged so that the screw is directed towards the one end of the opening, the screw facing the opposite direction when the block 22 is rotated to engage the opposite side of the stop 24. Thus when the panel 4 is closed (see Figure 3) the rods 15 engage the clips 17 as stated, and in order positively to lock the panel the blocks 22 on the two rods are turned about the latter to bring the screws immediately opposite the holes in the clip attachment plates 19. The screws may then be engaged within the holes in the plates, thus firmly securing the panel in its closed position, the panel being drawn tightly against the buffer strips 9 and 12 so that rattle and play are prevented. When, on the other hand, the panel is fully opened (see Figure 4) the blocks 22 are turned about the rods to cause the screws to face the opposite direction, that is, so that their ends lie immediately opposite the holes in the clip attachment plates 20, and the panel may then be locked in its open position by engaging the screws within the said holes. The same fasteners are thus employed for holding the panel in either position.

Although five slidable panels are shown, it is understood that any other suitable number of panels and panel openings may be provided, and although the openings are preferably arranged down the middle of the roof they may, if desired, be arranged at one side of the latter. Any other suitable arrangement may be provided for guiding the panels in the lateral direction of the vehicle, and for obtaining weather-proof joints when the panels are closed; also any other suitable means may be provided for locking the panels or for retaining them in their open and closed positions.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A vehicle having a top or roof provided with one or more openings or apertures adapted to be closed by a panel or panels or the like slidable in the transverse or lateral direction of the vehicle.

2. A vehicle having a top or roof comprising fixed or permanent side portions and a middle portion provided with one or more openings closed by a movable panel or panels or the like adapted to be slid in the transverse or lateral direction of the vehicle to uncover the openings, so as to lie over one or other of the fixed side portions of the roof.

3. A vehicle having a top or roof provided with a movable panel or the like, as claimed in claim 1 or 2, in which the front and rear edges of the panel are provided with depending inwardly-directed guide flanges engaging beneath co-operating flanges on the roof of the vehicle, substantially as described.

4. A vehicle having a top or roof provided with a movable panel or the like, as claimed in claim 1, 2 or 3, in which the edges of the panel which extend in the longitudinal direction of the vehicle are provided with depending flanges adapted to engage inclined or upwardly-projecting buffer strips at the corresponding edges of the panel opening when the panel is closed, substantially as described.

5. In a vehicle having a top or roof provided with a movable panel or the like, as claimed in any one of the preceding claims, means for retaining the panel in its open or closed position comprising depending parts or rods on the panel adapted to engage clips carried by the fixed portion of the roof or vehicle top, substantially as described.

6. In a vehicle having a top or roof provided with a movable panel or the like, as claimed in any one of the preceding claims, means for positively locking the panel in its open or closed position comprising a swivelly-mounted clamping member or members carried by the panel and capable of being turned to face opposite directions to engage a part or parts on one or other of two opposed edges of the panel opening, substantially as described.

7. A vehicle having a top or roof provided with a movable panel or the like as claimed in claim 6, in which the clamping member consists of a screw engaging an internally-screw threaded hole in a member swivelly mounted on a depending rod or shank carried by the panel, the said screw being adapted to engage a threaded hole in a plate or other part adjacent one or other of the opposed edges of the panel opening, substantially as described.

8. A vehicle having a top or roof provided with a movable panel or the like as claimed in claim 5, in which the depending parts or rods on the panel are connected by a bar or hand-rail for the purpose of enabling the panel to be opened or closed, substantially as described.

9. A vehicle having a top or roof provided with a movable panel or panels substantially as herein described and as set forth by the accompanying drawings.

Dated this 31st day of May, 1929.
H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929